

pursuit, the opportunity to become a viable alternative to the ILECs. To the ILECs, such policy represents nothing less than a threat to their traditional monopoly position and profitability.^{1/}

6. Neither the Act nor the Commission has misunderstood or confused the interests of consumers and the interests of CLECs. The purpose of the Act is explicitly and unambiguously to enhance consumer welfare.^{2/} The mechanism for doing so is to eliminate as many barriers to entry into the local exchange as possible and thereby to facilitate actual and prospective entry. CLECs play a central role in that process, and so the purposes of the Act and the viability of CLECs, especially at this early stage in the entry process, have much in common. The purposes of the Act are most certainly not consonant with protection of ILEC position and profitability.

7. The particular route to entry at issue here is the use of UNEs. It may be worthwhile to repeat and elaborate upon the FCC's description of how UNE-based entry is likely to occur:

It is possible that there will be sufficient demand in some local telephone markets to support the construction of competing local exchange facilities that duplicate most or even all of the elements of an incumbent LEC's network...It is also possible, however, that other local markets, now and even into the future, may not efficiently support duplication of all, or even some, of an incumbent LEC's facilities. Access to unbundled network elements in these markets will promote efficient competition for local exchange services... [*Local Competition Order*, ¶ 232]

This passage correctly recognizes that in many cases CLECs are likely to be substantially reliant upon UNEs at the outset of the entry process. Economies of scale, density, connectivity, and timing all mitigate in favor of leasing elements as a mechanism for quickly and effectively

¹ The RBOCs supported the Telecom Act only because it promised relaxation of the line of business restrictions.

² The ILECs claim to have adopted "consumer welfare" as their objective (see, e.g., Hausman and Sidak, ¶ 45), but in fact they have used the term interchangeably with "total welfare." The latter includes both consumer welfare and firm profits.

offering competitive local exchange service, thereby improving consumer welfare and market performance.

8. Over time CLECs will strive to self-provide as many elements as possible. Where scale and other economies can be surmounted, or even approximated, there are compelling business reasons why a CLEC is likely to prefer self-provision (vertical integration) to leasing of elements. Among the reasons for vertical integration enumerated in leading industrial organization texts^{3/} are:

- Coordination difficulties between buyer and seller
- The inherent uncertainty of supply and risk to buyer
- Possibility of “opportunistic behavior,” the deliberate exploitation of buyer-seller dependence.

9. In addition to these conventional reasons, the relationship between a CLEC and an ILEC is complicated by the dual role of the ILEC as supplier and competitor. As my earlier Declaration explained, economic theory, empirical evidence, and a wealth of historical experience make clear that this relationship is fraught with incompatible incentives and abundant opportunities for opportunistic behavior. No CLEC will operate in this manner for a moment longer than necessary. Instead, after UNE-based entry, a CLEC predictably will seize opportunities to gain independence of its ILEC supplier. Much economic evidence, also cited in my earlier Declaration, confirms that such phased entry into high-cost markets is typical.

10. The upshot of these considerations is that the evolution of competition in the local exchange will vary from place to place and over time. Indeed, within the same area multiple CLECs may even have different strategies depending upon their stage of evolution, customer

³ See, e.g., *Modern Industrial Organization*, Carlton and Perloff (1994), ch. 13.

base and potential, financial and technological capabilities, and so forth. What will emerge from this untidy process is nonetheless a vibrant form of competition in which as many CLECs as choose to try will in fact enter and offer services, with some succeeding and others failing. This scenario--letting a hundred flowers bloom--is precisely what the Act and the FCC had in mind.

11. By contrast, the ILEC view of competition in the local exchange envisions no need for actual competitors or even realistically potential competitors. For example, Hausman and Sidak (§ 175) offer the following criteria, any one of which would relieve ILECs of their obligation to offer UNEs:

- “As long as one CLEC is supplying the element in question”
- “As long as the asset [used in providing the element] is redeployable”
- “As long as one firm is offering cable telephony service”

12. Other ILEC-sponsored economists have similar criteria for relief of their obligations. Kahn (§ 20) proposes the following key question:

- “Are entrants purchasing or able to purchase inputs from others than the ILEC in a wholesale market?”

Aron and Harris (p. 30) would require demonstration of all the following conditions before the ILEC must offer UNEs:

- There is no CLEC that is self-providing the element or a substitute, or purchasing the element or a substitute, *and*
- No potential supplier could profitably enter within two years, *and*
- There is at least one firm that demonstrably could enter at TELRIC-based rates and earn a profit.

13. Criteria such as these would absolve an ILEC of any obligation to offer UNEs under a wide variety of circumstances. Examination of these circumstances provides a clear

understanding of the ILEC vision of the “competitive future”: First, there would be no ILEC-provided UNE if a “substitute” element is available. This simplistic criterion demonstrates no recognition of the importance of the degree of substitution, reliability of supply, time period in which the “substitute” must be available, and so forth. For example, the substitute might well be selective in its coverage, inferior in quality, and different in its cost, thus crippling any CLEC that relied upon it. Nonetheless, the availability of any arguable “substitute” would apparently satisfy the ILEC criterion.

14. Second, there would be no ILEC-provided UNE if the element is a piece of hardware (e.g., a switch) that can be moved from place to place. This simplistic criterion demonstrates no recognition of the current costs of moving, much less any sunk costs associated with an element’s operation in any location--for example, up-front charges for collocation cages, costs to obtain space where a switch is located, all non-recurring charges, and so forth. The mere fact that the hardware physically can be moved does not make all of its costs non-sunk. In addition, the stated focus on “the switch” is misplaced, since the prescribed element is, quite properly, the more complicated function termed “switching.” This criterion, too, could be satisfied without effective competition in the local exchange.

15. Third, there would be no ILEC-provided UNE if some company offers cable telephony. This simplistic criterion demonstrates no recognition of the differential costs, quality, and reliability of cable telephony. Hence it does not address its ability to constrain ILEC market power. Nor does this criterion depend upon whether or not the provider of cable telephony itself makes available elements or local access to other CLECs. If not, further entry is altogether foreclosed. Again, this criterion could be satisfied without the appearance of effective competition.

16. Fourth, there would be no ILEC-provided UNE if some rival arguably might appear in two years. This simplistic criterion would appear to concede as much as two years of unconstrained market power to each ILEC, and to do so based on sheer speculation about some potential entrant that might then emerge. Economic evidence makes clear that the constraining effect of potential entry is much weaker than the constraining effect of an actual rival, even in cases where threatened entry is far easier and quicker than that contemplated here.^{4/} Meeting this criterion need not result in actual alternatives to consumers or constraints on ILEC market power.

17. Fifth, there would be no ILEC-provided UNE unless a prospective entrant affirmatively demonstrated that it would enter if UNEs were available. This criterion is said to reflect a concern that creating UNEs without then inducing entry imposes costs without benefits. But as I have noted (and ILECs are quick to point out in other contexts), economic studies demonstrate some constraining effect from potential entry. Hence, there are demonstrable benefits from reducing entry barriers. More critically, the proposed criterion would further handicap an entrant by imposing explicit costs of demonstrating that it would enter if UNEs were made available, and also by having to publicly disclose details of its business plan for prospective entry. Far from facilitating entry, this ILEC criterion creates a new entry barrier.

18. Sixth, there would be no ILEC-provided UNE if another facilities-based CLEC exists. This simplistic criterion presumes that a single rival--of unspecified capabilities, at that--will suffice to achieve the competitive purposes of the Act.^{5/} This general presumption is

⁴ For example, Morrison and Winston, "Empirical Implications and Tests of the Contestability Hypothesis," *Journal of Law & Economics* (1987), find that a "potential entrant" into an airline market has no more than about one-third the effect of an actual incumbent rival. Their potential entrants are carriers already serving one end-point of a route: They are in the business and can readily extend their service to the route in question.

⁵ Hausman and Sidak appear to take a second CLEC as sufficient in and of itself. Kahn offers the qualification, still without proof, that in telecommunications, "the entry of only a

contrary to economic theory and evidence, virtually all of which demonstrates that additional rivals make a difference. Standard models of pricing in oligopoly emphasize the importance of firm numbers, among other factors.^{6/} The Merger Guidelines introduce their discussion of “The Potential Adverse Competitive Effects of Mergers” with the following statement (Section 2.10):

[A]s the number of firms necessary to control a given percentage of total supply decreases, the difficulties and costs of reaching and enforcing an understanding with respect to the control of supply might be reduced.”

19. Empirical evidence confirms the importance of having more than two competing firms. My own study of numerous manufacturing industries showed that margins fall only as a larger third firm emerges. I concluded, “Large market shares for the two leading firms seem most decisive for industry price-cost margins...”^{7/} Lamm finds a similar result, as do Geithman, Marvel, and Weiss, and also Koller and Weiss, but with the critical number of firms varying from four to six.^{8/} A series of studies of airline markets and railroads confirms that additional competitors reduce prices.^{9/} Even more emphatically, the evidence with respect to cellular duopolies clearly refutes the view that two firms suffice for competition.^{10/} Thus, the blanket

single rival is likely to make a very significant difference.” (¶ 9).

⁶ See, for example, Carlton and Perloff, *supra* note 3, ch. 7.

⁷ Kwoka, “The Effect of Market Share and Share Distribution on Industry Performance,” *Review of Economics and Statistics*, 1979, p. 108.

⁸ Lamm, “Prices and Concentration in the Food Retailing Industry,” *Journal of Industrial Economics*, 1981. Geithman, Marvel, and Weiss, “Concentration, Price, and Critical Concentration Ratios,” *Review of Economics and Statistics*, 1981. Koller and Weiss, “Price Levels and Seller Concentration,” in *Concentration and Price*, L. Weiss, editor (1989).

⁹ Among many other studies, see Morrison and Winston, *The Evolution of the Airline Industry*, Brookings (1995) and MacDonald, “Railroad Deregulation, Innovation, and Competition,” *Journal of Law & Economics*, 1989.

¹⁰ Parker and Roller, “Collusive Conduct in Duopolies,” *Rand Journal of Economics* (1997), examine cellular telephone markets and conclude, “A duopolistic industry structure is therefore not competitive and prices are not equal to marginal costs.” Notably, one of the

proposition advanced by the ILECs--that two firms equals "competition"--is demonstrably false. It will not bring competition to the local exchange.

20. I therefore conclude that the concept of "competition" envisioned by the ILECs has no basis in economics or policy.^{11/} Economics demonstrates that it will not produce competitive results, and consequently it is inconsistent with the objectives and vision of the Telecom Act. The latter strives to unleash competitive forces by reducing entry barriers and opening up the market to alternative providers of local exchange service. The limited, even crippled, form of "competition" that the ILECs envision will not do so. To the contrary, the predictable effect of their approach will be to insulate the ILEC market position and profitability and to deny consumers the benefits of real competition.

II. Impairment and Essentiality

21. In order to achieve its objectives, the Telecom Act requires ILEC provision of any element for which denial would "impair" a CLEC's ability to provide "the services that it seeks to offer." In the case of a "proprietary" element, ILEC provision is required if the element meets the higher standard of being "necessary." While these terms are not further defined in the Act, my previous Declaration indicated how their economic meaning can be discerned from the Act's fundamental purposes. After a brief summary of my previous observations, I will discuss how the economic meaning of "impair" and "necessary" can be further illuminated by a comparison with the alternative standard of "essentiality."

historic cellular duopolists was the ILEC.

¹¹ Hausman and Sidak go so far as to assert that "economists generally accept that with imperfect competition, prices are set as a markup over marginal costs, subject to a breakeven constraint so that the firm can cover its fixed and common costs" (§ 69). Economists do not generally accept this proposition, and they do not because it is incorrect. Imperfect competition does not generally result in zero profits, and the implication that "two firms equals competition" should not be taken seriously.

22. The Telecom Act is directed at the transition from monopoly to competition and is designed to hasten a process that is otherwise scarcely occurring. It presumes the existence of monopoly in the local exchange. It seeks competition that does not currently exist. It strives to encourage and accelerate the transition between the two. Its objective of consumer benefit requires viable competitors capable of offering real alternatives. Its devices (UNEs) and standards ("impair") must therefore be viewed as means to these ends. Interpretations inconsistent with these objectives--interpretations that do not further them, much less those that undermine them--by definition cannot be correct.

23. How, then, should "impair" be interpreted from an economic point of view? The Act's purposes will be achieved insofar as the impairment standard eliminates barriers to entry and substantial competition in the local exchange, to the maximum extent possible and at the earliest possible time. This requires availability of all elements required to produce bona fide consumer alternatives and to result in meaningful competition to the incumbent LECs. By "bona fide consumer alternatives," I mean rivals that are competitive in cost and quality to the ILECs, and constitute a practical consumer alternative to traditional ILEC provision of local exchange service. By meaningful competition, I mean the existence of technologically and financially capable rivals who constitute a substantial effective constraint on the exercise of ILEC market power.

24. These purposes will not be satisfied by hypothetical availability of elements, availability at some distant time, availability on terms that do not permit cost-competitive services, or availability of only some elements in some places. Such partial or conditional availability will result in material cost or quality disadvantages to CLECs--crippled CLECs--and hence to impairment of their ability to offer competitive services. That in turn will permit ILECs

to retain much of their market power and profitability, deny consumers the benefits of competition, and require the continuation of substantial regulation.

25. Since the very purpose of the Act's "impairment" standard entails substantial concessions of incumbent market power, one might view with some skepticism the ILEC interpretation of that standard. After all, no company can be expected to propose the extinction of its privileged position. Indeed, ILECs advocate a far different standard for impairment, one borrowed from a different policy milieu, one directed at different ends, and one with a different methodology than the Telecom Act. This standard is based on the essential facilities doctrine.^{12/} To understand what is entailed in the application of this doctrine, it will be helpful to describe the first, and still paradigmatic, case of essential facilities--the classic *Terminal Railroad* antitrust case.^{13/}

26. In this case, the turn-of-the-century Terminal Company had control of a bridge across the Mississippi River at the important St. Louis crossing. In this capacity it could charge a monopoly price to user railroads. Subsequently, the Terminal Company was acquired by some of the competing railroads, raising the prospect that control of the bottleneck bridge (the "essential facility") could be used to exclude rivals in the railroad transportation business. The Supreme Court concurred and, as a remedy, ordered the Terminal Company to admit competing railroads to the consortium owning the bridge.

27. *Terminal Railroad* and later cases established the initial outlines of the essential facilities doctrine. Its specifics have been set forth in *MCI v. AT&T*.^{14/} As the latter case makes

¹² In reality, they advocate essential facilities "plus." I will address the plus factor later.

¹³ *United States v. Terminal R.R. Assn*, 224 U.S. 383 (1912). While this case did not use the term "essential facilities," it is widely acknowledged to have set forth all its key elements and thus to have established the doctrine.

¹⁴ *MCI v. AT&T*, 708 F. 2d 1081 (7th Cir. 1982).

clear, the essential facilities doctrine is an antitrust doctrine, generally part of an allegation of monopolization under Section 2 of the Sherman Act. As such, the burden is, first, to demonstrate the existence of monopoly power and, second, to show that the monopoly is the product of “willful acquisition or maintenance.” The *MCI* court then set out the following further conditions for a violation under the essential facilities doctrine: (a) control of an essential facility by a monopolist, (b) a competitor’s inability practically or reasonably to duplicate it, (c) denial of use of the facility to a competitor, and (d) feasibility of providing the facility.

28. Although the criteria for essential facilities bear a superficial resemblance to aspects of the present inquiry, they are in fact quite different. The differences are numerous and relevant. First, the Telecom Act is not an antitrust statute, nor is it a telecom-specific application of the antitrust statutes. It does not require a *de novo* inquiry into the existence and uses of monopoly power. Rather, it presumes the existence of monopoly power. In a sense, the Telecom Act begins where those questions leave off: It is a regulatory statute designed to permit, or hasten the advent of, competition where competition simply does not exist. Such proactive methods are not part of the antitrust statutes and process.

29. A second important difference between the Telecom Act and the essential facilities doctrine is highlighted by the *Terminal Railroad* example. There the key antitrust issue was not market power and monopoly pricing for bridge access *per se*, since an independent Terminal Company could have charged any price it chose. Rather, the court was concerned with the prospect of extending the railroad-owners’ market power by raising costs to the competing railroads who could not operate without access to the bridge. This concern with extension of market power from the essential facility to some other market is one aspect--but only one aspect--of the Telecom Act. Quite apart from concern with abuse of the local exchange monopoly, the

Act seeks competition *in* the local exchange also because of the inherent benefits to consumers of local exchange service.

30. Third, application of the essential facilities doctrine entails a relatively high hurdle. Court opinions rely upon terminology such as “inability,” “denial,” “feasibility,” “duplicate,” and, of course, “essential.” Most of these are unqualified and the choice of language is intended to ensure that more moderate differential advantages between firms are not routinely subject to application of this doctrine.^{15/} The Telecom Act reads quite differently: “Impairment” connotes a differential advantage, not the flat-out inability otherwise to perform the function implied by “essentiality.”^{16/} The Telecom Act employs the “impairment” standard in order to enhance, not limit, opportunities to enter.

31. Fourth, the essential facilities doctrine would presumably not be invoked if a single close substitute product or provider existed. Nowhere, however, does the Telecom Act state or imply such a benign a view of duopoly. The existence of a single alternative provider of local exchange service is not presumed to satisfy the purposes of the Act. As previously stated, economic theory, economic evidence, and a wealth of experience (for example, in cellular) confirm that duopoly does not generally yield competitive results, and in many cases may produce an outcome that differs little from that under simple monopoly. Policy that settles for duopoly--much less the potential duopoly that ILECs espouse--would then accomplish nothing:

¹⁵ Areeda, for example, states, “An essential facility must be more than an input for which the monopolist enjoys a cost advantage, lest we turn every dominant firm enjoying scale economies into a public utility.” *Treatise*, ¶ 773.

¹⁶ For example, suppose an ILEC’s cost for a loop is \$8 per month, but because of economies of scale, density, and connectivity, a CLEC’s cost was \$12 per month. From an economic point of view the competitive constraint imposed by the CLEC is clearly impaired by its cost disadvantage, and consumers are demonstrably and measurably harmed. That is true whether or not these conditions meet the criteria for essential facilities.

Appearances would change somewhat, but consumers would not benefit. The Telecom Act wisely avoids this limiting feature of the essential facilities doctrine.

32. Apart from these important economic and policy differences between the essential facilities doctrine and the impairment standard, three other points deserve mention. First, the ILEC “impairment” standard would augment the usual four necessary criteria for an essential facility by adding the need to demonstrate that by restricting access to the element, the ILEC could exercise market power to end users in a relevant geographic market.^{17/} This would allow an ILEC to refuse a CLEC access to an element whenever the ILEC can make the case that it faces a possible constraint on its market power from a real or potential CLEC. Such a proviso goes far beyond the “two firms is enough” argument. It gives the ILEC a final trump card in the deck of essential facilities conditions: The ILEC can escape any obligation simply by making a case that it feels a constraining effect from a potential entrant or service.

33. Second, having asserted the high standard of essential facilities for “impairment,” the ILECs next must give meaning to the even higher threshold of “necessary” for proprietary elements. They propose that “necessary” be interpreted as otherwise literally “impossible.” If there is semantic headroom above their interpretation of “impairment,” this may be it, but it is doubtful there is much practical headroom in their impairment standard. Hence, it is unclear whether any element could or would satisfy the language for “necessity.”^{18/} The result--indeed,

¹⁷ Hausman and Sidak ¶ 123.

¹⁸ Hausman and Sidak assert that “In the language of economics, ‘necessity’ and competitive ‘impairment’ are given rigorous meaning by deriving the price elasticity of demand for any given unbundled element” (¶ 114). Despite this claim, the line distinguishing impairment, necessity, and essentiality is no brighter when stated in these terms--unless, of course, they are implicitly advocating empirical estimation of elasticities for each element in each geographic market (itself the subject of inquiry) in each time period. Even then, impairment vs. necessity vs. essentiality would require judgments about the magnitudes of elasticities, essentially the same judgments as at the outset, simply dressed up in the language of

the obvious intent--is to define "necessary" elements effectively out of existence and thereby protect the historic ILEC monopoly.

34. Third, the ILECs adamantly maintain that proof of "impairment" or "necessity" must be (a) element by element, (b) relevant geographic market by relevant geographic market, and (c) time period by time period. Hausman and Sidak, for example, note that "determining whether a particular network element in a particular geographic area is an essential facility requires a close empirical investigation based on the specific facts in the geographic market" (§ 98). With more than seven elements, potentially hundreds of arguable geographic markets, and a continuum of time periods, and in addition with five criteria for impairment, this approach must be seen for what it is: The creation of a new entry barrier--an infinity of boundless inquiries, where the incumbents have critical procedural advantages and are certain to delay CLEC entry. No one can seriously believe that competition in the local exchange would emerge out of this administrative and legal black hole.^{19/}

35. If proof of the pudding is in the eating, the ILECs have provided abundant, if not altogether tasty, appetizers: They supply numerous examples of what elements will and will not survive their standards, and hence the logical implications of those standards need not simply be matters of speculation. In particular, Hausman and Sidak (§ 142) note that their essentiality criteria imply that no ILEC would be obliged to provide switching or operator services anywhere in the country. In some places loops might be subject to mandatory provision. As for network interface devices, transport, signaling systems, and operations support systems, these would be

economics.

¹⁹ In an odd twist, ILEC declarant Kahn concedes the administrative infeasibility of the analogous process in which "the regulator is supposed to ascertain--for each market and potentially, in principle, for each possible UNE and perhaps even each potential CLEC--what degree of cost disadvantage would actually prevail if provision of the UNE by the ILEC were not mandated..." (§ 19).

subject to “geographic-specific fact finding” for determination. Kahn concurs with this assessment (§ 29).

36. The key issues are now quite clear: Will there be alternatives for consumers and effective constraints on ILECs in a world in which switching and operator services are nowhere subject to unbundling? Will full and effective competition emerge in a world in which subscriber loops and transport are subject to mandatory unbundling only in some areas? Will the purposes of the Act be ensured by a process requiring a potential CLEC to survive “geographically-specific fact finding” in order to obtain access to other elements?

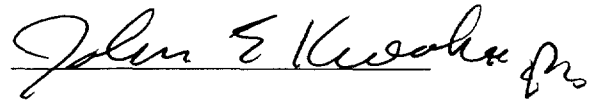
37. All of the defects inherent in the ILECs’ approach are made clear by their examples. No one familiar with the process of bringing competition to an unwilling incumbent can believe that this process will actually lead to competition. Rather than offering the “limiting principle” for the impairment standard that the Court sought, the ILECs have countered with a “negating principle”--one that will nullify the very purposes of the Telecom Act.

III. Conclusions

38. Competition will not come easily to the local exchange. The process of entry is unlike that into other businesses. The local exchange is characterized by decisive economies of scale, density, and connectivity. In addition, the historic monopoly position of the ILECs gives them subtle advantages that cannot be displaced. And finally, under the best of circumstances CLECs will be dependent on their direct competitor for crucial inputs. Nonetheless, there are entrepreneurial firms willing to mount the effort and incur the risk of entry. But competition will remain illusory unless UNEs are available to CLECs when the latter would otherwise face material cost or quality disadvantages. Any higher standard of “impairment” would not bring costs and prices down to competitive levels and would thereby deny consumers the promised benefits of competition.

I declare, under penalty of perjury, that the foregoing is true and correct.

Executed on June 9, 1999.

A handwritten signature in cursive script, reading "John E. Kwoka, Jr.", written over a horizontal line.

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Curriculum Vitae

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Books:

The Antitrust Revolution, co-edited with Lawrence J. White:
3rd ed., Oxford University Press, 1999;
2nd ed., HarperCollins, 1994;
1st ed., Scott, Foresman, 1989.

Power Structure: Ownership, Integration, and Competition in the U.S. Electricity Industry, Kluwer, 1996.

Articles:

"Commitment to Competition: An Assessment of Antitrust Enforcement Budgets," IOS Presidential Address, Review of Industrial Organization, forthcoming.

"Manifest Destiny? The Union Pacific-Southern Pacific Railroad Merger," in The Antitrust Revolution, with L.J. White, 3rd ed., 1999.

"Herfindahl Concentration with an Import Fringe and with Supply Constraints," Review of Industrial Organization, August 1998.

"The U.S. Automobile Industry: Overtaking an Oligopoly," in Industry Studies, Larry Deutsch, ed., Prentice-Hall, 1993; 2nd ed., 1998.

"Transforming Power: Lessons from British Electricity Restructuring," Regulation, Summer 1997

"The Price Effects of Bidding Conspiracies: Evidence from Real Estate Auction 'Knockouts'," Antitrust Bulletin, Summer 1997.

"Altering the Product Life Cycle of Consumer Durables: The Case of Minivans," Managerial and Decision Economics, January/February 1996.

"The Sales and Competitive Effects of Styling and Advertising Practices in the U.S. Automobile Industry," Review of Economics and Statistics, November 1993.

"Implementing Price Caps in Telecommunications," Journal of Policy Analysis and Management, Fall 1993.

"Regulation and Deregulation American Style," Sosyal Bilimler Dergisi, Fall 1993

"The Effects of Divestiture, Privatization, and Competition on Productivity in U.S. and U.K. Telecommunications," Review of Industrial Organization, no. 1, 1993

"The Effects of Divestiture, Privatization, and Competition on Productivity in U.S. and U.K. Telecommunications: A Briefer Reply," in Review of Industrial Organization, 1993.

"Market Segmentation by Price/Quality Schedules: Some Evidence from Automobiles," Journal of Business, October 1992.

"The Output and Profit Effects of Horizontal Joint Ventures," Journal of Industrial Economics, September 1992.

"The American Antitrust Revolution," Consumer Policy Review, July 1992.

"Price Squeezes in Electric Power: The New Battle of Concord," Electricity Journal, June 1992.

"Productivity and Price Caps in Telecommunications," in Price Caps and Incentive Regulation in Telecommunications, M. Einhorn, ed., Kluwer, 1991.

"Price Cap Reform in Telecommunications: A Penny Saved..." Regulation, Winter 1990.

"The Effect of Market Growth and Contraction on Industry Price-Cost Margins," Eastern Economic Journal, July-September 1990.

"The Private Profitability of Horizontal Mergers with Non-Cournot and Maverick Behavior," International Journal of Industrial Organization, Fall 1989.

"International Joint Venture: General Motors and Toyota," in The Antitrust Revolution, J. Kwoka and L.J. White, eds. Scott, Foresman, 1989; 2nd ed., HarperCollins, 1994.

"Design Criteria for Incentive Regulation," in Report of D.C. Public Service Commission on Symposium, "Competition and the Regulation of Telecommunications Services in the District of Columbia," December 1988.

"Accounting for Losses: The Great Detroit Newspaper War," Journal of Media Economics, Fall 1988.

"Cooperation vs. Rivalry: Price-Cost Margins by Line of Business," with David Ravenscraft, Economica, August 1986.

"Efficiencies, Failing Firms, and Alternatives to Merger: A Policy Synthesis," with Frederick R. Warren-Boulton, Antitrust Bulletin, Summer 1986.

"Messy Merger Guidelines: A Comment," Antitrust Law and Economics Review, 1986 (No 2).

"The Herfindahl Index in Theory and Practice," Antitrust Bulletin, Winter 1985.

"Markets: A Magical Mystery Tour of Current Policy," Society, November/December 1984.

_____, reprinted in Thomas Swartz and Frank Bonello, Taking Sides (Duskin, 1986).

"Market Power and Market Change in the U.S. Automobile Industry," Journal of Industrial Economics, June 1984.

"Market Share Distribution and Industry Performance: A Reply," Review of Economics and Statistics, May 1984.

"Output and Allocative Efficiency Under Second-Degree Price Discrimination," Economic Inquiry, April 1984.

"Advertising and the Price and Quality of Optometric Services," American Economic Review, March 1984.

"The Limits of Market-Oriented Regulatory Techniques: The Case of Automotive Fuel Economy," Quarterly Journal of Economics, November 1983.

"Self-Regulation in Optometry: The Impact on Price and Quality," with R. Bond, J. Phelan, and I. Whitten, Law and Human Behavior, Vol. 7, Nos. 2/3, 1983.

"Monopoly, Plant, and Union Effects on Manufacturing Wages," Industrial and Labor Relations Review, January 1983.

_____, reprinted (in Spanish) in El Mercado de Trabajo y la Estructura Salarial, Centro de Publicaciones, Ministerio de Trabajo y Seguridad Social, Madrid, 1988.

"Regularity and Diversity of Firm Size Distributions in U.S. Industries," Journal of Economics and Business, October 1982.

"Does the Choice of Concentration Measure Really Matter?" Journal of Industrial Economics, June 1981.

Effect of Restrictions on Advertising and Commercial Practice in the Professions: The Case of Optometry, with R. Bond, J. Phelan, and I. Whitten, FTC Staff Report, September 1980.

"Establishment Size, Wages, and Job Satisfaction: The Trade-offs," in The Economics of Firm Size, Market Structure and Social Performance, Conference Proceedings, Federal Trade Commission, July 1980.

"EIS Market Share Data: Nature, Reliability, and Uses," Antitrust Law Journal, Vol. 47, No. 3, 1979.

"The Effect of Market Share Distribution on Industry Performance," Review of Economics and Statistics, February 1979.

_____, excerpt in Donald Watson and Malcolm Getz, Price Theory in Action, (Houghton Mifflin, 1981).

Market Shares, Concentration, and Competition in Manufacturing Industries. FTC Staff Report, August 1978.

"Regional Distribution of the 'Subsidy' Under Federal Milk Market Regulation," in Farm Size and Regional Distribution of the Benefit Under Federal Milk Market Regulation. FTC Staff Report by David R. Frank, May 1978.

"Pricing Under Federal Milk Market Regulation," Economic Inquiry, July 1977.

"Large Firm Dominance and Price-Cost Margins in Manufacturing Industries," Southern Economic Journal, July 1977.

"The Organization of Work: A Conceptual Framework," Social Science Quarterly, December 1976.

"Federal Milk Market Regulation: The Multiple Pricing System," Proceedings, Conference on Milk Prices and the Market System, Community Nutrition Institute, Washington, D.C., January 1976.

"Optimal Policy When Effects on Distribution are Unknown," with James C. Ohls, Public Finance Quarterly, April 1975.

Book Reviews:

Costs and Productivity in Automobile Production: The Challenge of

Japanese Efficiency by Melvyn Fuss and Leonard Waverman, in Review of Industrial Organization, June 1994.

The Economics and Regulation of United States Newspapers by Stephen Lacy and Todd Simon, in Journal of Media Economics, no. 1, 1994.

Profits and the Stability of Monopoly by M. A. Utton, in The Antitrust Bulletin, Summer 1987.

The Japanese Automobile Industry by Michael Cusumano, in Journal of Economic History, June 1987.

Industrial Organization by Kenneth Clarkson and Roger Miller, in Antitrust Law and Economics Review, 1985 (No. 3).

Power and Market: Government and Economy by Murray Rothbard, in Southern Economic Journal, October 1978.

Monographs:

"Reform of the Electric Power Sector in Britain," GWU Center for Economic Research Discussion Paper 96-02, December 1996.

"The Origins and Purpose of Public Enterprise," GWU Center for Economic Research Discussion Paper 96-01, December 1996

"Privatization, Deregulation, and Competition: A Survey of Effects on Economic Performance," World Bank PSD Occasional Paper No. 27, September 1996.

"Vertical Integration and Its Alternatives for Achieving Cost Efficiencies in Electric Power," GWU Department of Economics Discussion Paper D-9601, March 1996.

"The Price Effects of Buying Rings: Evidence from 'Knockouts' in Real Estate Auctions," GWU Department of Economics Discussion Paper D-9503, March 1995.

"Public vs. Private Ownership and Economic Performance: Evidence from the U.S. Electric Power Industry," Harvard Institute of Economic Research Discussion Paper 1712, February 1995.

"Ownership, Competition, and Price Performance of Electric Utilities," GWU Department of Economics Discussion Paper D-9408, October 1994.

"Lengthening and Strengthening the Product Life Cycle: The Case of Minivans," GWU Department of Economics Discussion Paper D-9212, November 1992.

"The Sales and Competitive Effects of Styling and Advertising Practices in the U.S. Automobile Industry," GWU Department of Economics Discussion Paper D-9109, March 1991.

"Policy and Productivity in the U.S. and U.K. Telecommunications

Industries," GWU Department of Economics Discussion Paper D-9004, April 1990.

"Regulation American-Style: Heavy-Handed, Light-Handed, and (Sometimes) Off-Handed," March 1990.

"Unleashing Market Forces: Lessons from Deregulation of U.S. Industry," February 1990.

"Accounting for Losses: The Great Detroit Newspaper War," GWU Department of Economics Discussion Paper D-8809, February 1988.

"Antitrust Policy and Foreign Competition," GWU Department of Economics Discussion Paper D-8711, November 1984.

"Efficiencies, Failing Firms, and Alternatives to Merger: A Policy Synthesis," with F. Warren-Boulton, Department of Justice, Antitrust Division Discussion Paper EAG 86-14.

"Market Segmentation by Product Quality: Some Evidence from Automobiles," GWU Department of Economics Discussion Paper D-8603, May 1986.

"Industrial Contraction and Sunk Costs as Constraints on Concentration," GWU Department of Economics Discussion Paper D-8502, June 1985.

"Market Power from Horizontal Mergers and Joint Ventures," GWU Department of Economics Discussion Paper D-8413, January 1985.

"Cooperation vs. Rivalry: Price-Cost Margins by Line of Business," with D. Ravenscraft, Federal Trade Commission Bureau of Economics Working Paper No. 127, June 1985.

"More on Market Share Distribution and Industry Performance," GWU Department of Economics Discussion Paper D-8210, September 1982.

"Advertising and the Price and Quality of Optometric Services," GWU Department of Economics Discussion Paper D-8209, September 1982.

"Behavior of an Auto Firm Under the Fuel Economy Constraint," FTC Bureau of Economics Working Paper No. 28, June 1980.

"Output Under Second-Degree Price Discrimination," FTC Bureau of Economics Working Paper No. 21, October 1979.

"Does the Choice of Concentration Ratio Really Matter?" FTC Bureau of Economics Working Paper No. 17, October 1979.

"The Diversity of Firm Size Distributions in Manufacturing Industries,"
FTC Bureau of Economics Working Paper No. 12, February 1978.

"The Effects of Market Shares and Share Distribution on Industry
Performance," FTC Bureau of Economics Working Paper No. 2, March 1977.

Other:

Membership in: American Economic Association
Industrial Organization Society
European Association for Research in Industrial Economics
Southern Economics Association

Board of Advisors, American Antitrust Institute: 1998 to present

President, Industrial Organization Society: 1998-99

Board of Editors, Journal of Media Economics: 1987-96

Advisory Board, Antitrust Law and Economics Review: 1985-90

Award for Meritorious Service, Federal Trade Commission, 1980

"Antitrust Analysis and the 'Cooperative Core': It's the First Two
Market Shares That Count," interview by Charles Mueller, Antitrust Law and
Economic Review, 1983 (No. 4) and 1984 (No. 1).

Testimony before Committees of U.S. House, U.S. Senate, and State
Legislatures.

Analysis and testimony in antitrust, regulatory, and international
trade proceedings.

